

University of La Verne  
College of Education and Organizational Leadership  
Department of Education and Teacher Development



# EDUC 448

## Mathematics for Teachers of Young Children

Spring 2013, 4 units

Instructor: Bill Selak, Masters in Educational Technology & Learning

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Class Websites

- <http://bb.laverne.edu/>
- <http://www.billselak.com/educ448>

### About EDUC 448

This course covers math curriculum for children ages 3-8 based on the standards set by the National Council of Teachers of Mathematics and the Guidelines of the California State Department of Education. Students will explore their own phobia, and the role teachers play in creating math phobia. They will study math with the goal of improving their own math skills, and learn to challenge and excite children in the study of math. This class is 4 units and includes 15 hours of fieldwork (1 unit).

### Student Outcomes and Expected Competencies

The student will have the opportunity to:

- First. Know, understand, and apply five math strands set by the National Council of Teachers of Mathematics.
- Second. Develop and evaluate lesson plans using the five NCTM strands for ages three to eight.
- Third. Demonstrate developmentally appropriate teaching strategies in a mathematical classroom environment.
- Fourth. Challenge one's math anxiety and beliefs regarding an ability to teach math while developing positive dispositions towards the subject of math.
- Fifth. Report and reflect on research as it relates to culture, socioeconomic status, gender, bilingual learners, and learning differences.

- Sixth. Review current research as a means for understanding the purpose, methodologies, findings, and conclusions of the research method.
- Seventh. Understand assessment and how it guides instruction.
- Eighth. Assess an early childhood math environment for the characteristics of an effective math program.
- Ninth. Understand the appropriate and effective use of technology to teach mathematical concepts.
- Tenth. Understand the appropriate and effective use of children's literature to teach mathematical concepts.
- Eleventh. Identify strategies to promote problem solving, reasoning, communication, connections, and representation by incorporating the processing strands into the unit lesson plans.

## **NAEYC Initial Licensure Standards**

### ***Standard 1a, 1b, and 1c: Promoting Child Development and Learning***

Candidates use their understanding of young children's characteristics and needs, and of multiple interacting influences on children's development and learning, to create environments that are healthy, respectful, supportive, and challenging for all children.

### ***Standard 3a, 3b, 3c, and 3d: Observing, Documenting, and Assessing to Support Young Children and Families***

Candidates know about and understand the goals, benefits, and uses of assessment. They know about and use systematic observations, documentations, and other effective assessment strategies in a responsible way, in partnership with families and other professionals, to positively influence development and learning.

### ***Standard 4a, 4b, 4c, and 4d: Using Developmentally Effective Approaches to Connect with Children and Families***

Candidates integrate their understanding of and relationships with children and families; their understanding of developmentally effective approaches to teaching and learning; and their knowledge of academic disciplines to design, implement, and evaluate experiences that promote positive development and learning for all children.

### ***Standard 5a and 5c: Using Content Knowledge to Build Meaningful Curriculum***

Candidates use their knowledge of academic disciplines to design, implement, and evaluate experiences that promote positive development and learning for every child.

### ***Standard 6c and 6d: Becoming a Professional***

Candidates engage in continuous, collaborative learning to inform practice. Their practice is influenced by knowledgeable, reflective, and critical perspectives on early education.

## Required Textbooks and Resource

Math: Facing an American Phobia

By Marilyn Burns, Math Solutions Publications 1998

ISBN: 0941355195

Available on Amazon.com at <http://amzn.to/448burns>

Teaching Mathematics in Early Childhood

By Sally Moomaw

ISBN: 1598571192

Available on Amazon.com at <http://amzn.to/448moomaw>

Principles and Standards for School Mathematics

NCTM 2000

Access online at <http://standards.nctm.org> and in Google Drive

The Publication Manual of the American Psychological Association (6th ed.).

By R. Perrin, Houghton Mifflin Company 2010

ISBN: 0547201931

Available on Amazon.com at <http://amzn.to/448apastyle>

## Academic Accommodations Statement

A student with a disability, who would like to request an academic accommodation should contact the Students with Disabilities Office, located at 2147 "E" Street, La Verne, CA. 91750. The building is on the west side of "E" Street, between Second and First Avenues. For more information, call (909) 593-3511, ext. # 4441.

## Academic Honesty

Each student is responsible for performing academic tasks in such a way that honesty is not in question. Unless an instructor specifically defines an exception, students are expected to maintain the following standards of integrity:

- All tests, term papers, oral and written assignments, recitations, and all other academic efforts are to be the work of the student presenting the material.
- Any use of wording, ideas, or findings of other persons, writers, or researchers requires the explicit citation of the source; use of the exact wording requires a "quotation" format.
- Deliberately supplying material to a student for purposes of plagiarism is also culpable. When academic honesty is in question, the following may occur:
  1. A faculty member who has clear evidence that academic honesty has been violated may take appropriate disciplinary action. Appropriate disciplinary action may include, but is not limited to, requiring the student to rewrite a paper or retake a test, giving the

student an F on the assignment and/or in the course, and/or recommending expulsion. If the action includes giving a course grade of NCR or F and/or a recommendation for expulsion because of academic dishonesty, the faculty member must report the action to the Department Chair and/or Academic Dean (or to the Campus/Program Director for off-campus situations).

2. If a faculty member has reason to suspect academic dishonesty (even after having seen requested additional or revised work when appropriate) and the student denies the allegation, the faculty member may refer the matter to the Provost (through the Program Director for off-campus situations). Following due process an Academic Judicial Board may be formed to investigate the matter and make a recommendation to the Provost about whether academic honesty has been violated. The Provost will then take appropriate action, which may include, but is not limited to, academic probation, suspension, or expulsion. In this process, students may be asked to produce earlier drafts of their work and/or original notes and resources, other samples of writing, or documents deemed appropriate or necessary by the Board.
3. Grades of F or NCR received in courses due to academic dishonesty will be filed with appropriate documentation for future reference in the office of the Provost by the Department Chair, Academic Dean, or Campus/Program Director. Students receiving an F or NCR as a result of academic dishonesty will be sent a letter from the Provost noting that a second offense will result in expulsion.
4. Expulsion for academic dishonesty will be noted on the student's transcript by the words "Expelled for Academic Dishonesty."

## Exams

Midterm and Final exams will consist of short answers and essays. The exams will cover the course material and will include application of knowledge. Students must be prepared to take the exam without the use of note cards or textbooks. Make-up exams will be given only for extreme, verifiable emergencies.

## Readings and Written Assignments

There are reading assignments each week that students are expected to complete *prior to* each class. Participation in many of the activities will require background knowledge of concepts, as presented in the text, to be successfully practiced in the classroom. The student's participation grade will be affected if not prepared for each class.

All work submitted must be typewritten, double spaced, using no larger than 12-point font. Assignments are considered late if not submitted by the beginning of class on the due date. Late assignments will be penalized 10% of the total points available per assignment for each week late, or portion thereof. It is up to the discretion of the professor whether make-up exams will be allowed after the initial testing date. Specific arrangements must be made in advance of the exam.

## Course Calendar:

Week	Topics	Reading	Assignments
1 March 26	Syllabus Overview, explanation of responsibilities and assignment expectations, Math Anxiety, Research in Mathematics, Content Standards Introduction.	Moomaw Ch. 1	Sign up for Remind 101 and check Google Drive
2 April 2	Read research-based article: Role of Maternal Beliefs in Predicting Home Learning Activities, Review fieldwork assignment, Review Dr. Nicoll's article.	Burns Ch. 2 Moomaw Ch. 2	Bring copy of research article
3 April 9	Number and Operations Strand (counting, comparing, place value, ordinal and cardinal numbers, connecting number words, numerals, quantities, rational numbers, addition and subtraction, computation tools), Number & Operations Activity Centers, Principles in Teaching.	Burns Ch. 4 Moomaw Ch. 3	Due: Binder with 5 dividers  Due: Summary of Research (submit with self-assessed rubric)
4 April 16	Mathematics for English Language Learners, Cultural Aspects of Children Mathematics, Processing Standards-Representation, Communication, Problem-Solving, Reasoning, Connections. Lesson Plan Format, pre- and post-assessment.	Burns Ch. 5 Moomaw Ch. 4	Due: Numbers and Operations section of Portfolio complete with standards, class notes, numbers and operations lesson, and mini-fieldwork Unit 1.
5 April 23	Algebra Strand (sort, classify, order, patterns, symbolic notation, qualitative and quantitative change), Algebraic Functions, Algebra Activity Centers.	Burns Ch. 8 Moomaw Ch. 5	

Week	Topics	Reading	Assignments
6 April 30	Geometry Strand (attributes of two and three dimensional shapes, composing and decomposing shapes, transformations, visualization, position, direction and distance; find and name locations), Geometry Activity Centers, Geometry Photo Assessment, Midterm review.	Burns Ch.13 Moomaw Ch. 6	Due: Algebra section of Portfolio complete with standards, class notes, numbers and operations lesson, and mini-fieldwork Unit 2.
7 May 7	Review of lesson plan format, Storybook Math: Book Sharing, Midterm.	Burns Ch. 12,13 Moomaw Ch. 7	Midterm Exam  Due: Geometry section of Portfolio complete with standards, class notes, numbers and operations lesson, and mini-fieldwork Unit 3.
8 May 14	Measurement Strand (compare and order, standard and non-standard units, appropriate measurement tools).	Moomaw Ch. 8	
9 May 21	Literature/Math connections: Extend a math concept throughout the day (worksheet)  Data Analysis and Probability Strand (pose questions and gather data, classify according to attributes, parts of sets and data, likely and unlikely), Measurement and Data Analysis Activity Centers.		Due: Measurement section of Portfolio complete with standards, class notes, numbers and operations lesson, and mini-fieldwork Unit 4.

Week	Topics	Reading	Assignments
10 May 28	Presentation of implemented lesson and peer evaluation, Math Portfolio Evaluation, Final Exam.		Due: Data and Analysis section of Portfolio complete with standards, class notes, numbers and operations lesson, and mini-fieldwork Unit 5.  Due: Lesson Plan submitted on TaskStream. Self-assessed rubric is due when you present  Final Exam

Course schedule, topics, evaluation, and assignments may be changed at the instructor's discretion. Modification of this syllabus may be made at any time at the discretion of the professor or the department. Check BlackBoard regularly for current schedule.

# Assignments

All assignments must be completed in order to pass the class.

Refer to the rubrics on BlackBoard for detailed information regarding assignment content and grading procedures. All assignments must be submitted with a self-assessed rubric, identified by the student name and ID number. All late assignments will have 10 points deducted from the total score. No assignment will be accepted after the last class meeting. All written assignments must be submitted in Google Drive or BlackBoard.

## Journal Responses

50 pts.

Due bi-weekly

Journals will be based on the Marilyn Burns book chapters 2, 4, 5, 8, and 13. There will be up to 10 points given for each Blackboard journal entry completed. Points will be earned for thoughtful responses that focus on understanding of mathematical concepts, as well as how personal attitudes and teaching methods can affect children's learning and self-confidence. Math anxiety will be a central theme in these journal topics.

## Lecture Notes

25 pts.

Number & Operations

Due April 9 (week 3)

Algebra

Due April 23 (week 5)

Geometry

Due April 30 (week 6)

Measurement

Due May 14 (week 8)

Data Analysis & Probability

Due May 21 (week 9)

Lectures for the content area strands have been recorded. Watch the video of the content area strand before class begins, and take notes in Google Drive. Organize the document and write down the strand, all the standards, and list additional examples.

## Research Article Review

50 pts.

Due April 9 (week 3)

Identify a research journal article that highlights a current math study (no earlier than 2008) focusing on the pre-K-2nd grade age group. The title of the article, author, and the journal in which the article was found must be identified.

Submit a written paper identifying the research focus, participants, methodologies, findings, and implications for children ages 3–8, teachers of young children, parents of young children, or education as a whole. Instructor evaluation will focus on topic relevance, student's ability to understand and analyze research, and application of APA format.

## Math Portfolio

250 pts

Due May 28 (week 10)

Create a working portfolio that includes NCTM content and processing strand standards, class notes, original lesson plans with peer edits, and supporting documentation from mini-units to include:

- Copy of the NCTM Pre-K–2nd grade standards (each content area is a section of the binder).
- One written lesson (peer reviewed and edited) for each of the five NCTM content strands.
- Class notes for each standard, including lecture notes, classroom applications, photos, literature connections, etc.
- Corresponding Mini-Fieldwork Unit: Implement NCTM and Common Core Standards with children ages 3-8. Design specific, developmentally appropriate mathematical content activities and reflect on the design and implementation process. The completion of five mini-units (15 hours total) is required for the fieldwork portion of this class. Documentation of completing the mini-units is required to be included in the math portfolio. Each content area will have its own mini-fieldwork unit.

## Lesson Plan & Presentation 125 pts.

Due Dec. 4 (week 10)

Choose one of five completed lesson plans to submit for assessment. This lesson plan represents a Key Assessment for the Child Development Program and must be uploaded into TaskStream. The Number and Operations strand may not be submitted for this assignment (select: Algebra, Geometry, Data Analysis, or Measurement).

Additionally, a final presentation (PowerPoint, Keynote, Google Presentation, etc.) will be required to demonstrate your implementation of this lesson plan. A detailed self-evaluation and reflection of teaching will be required. The presentation will meet the implementation and delivery portion of the rubric, as well as provide visual documentation for the written lesson plan. A final grade will not be given in this class without submission to TaskStream. It is the student's responsibility to maintain his/her TaskStream account.

## Midterm & Final

100 pts.

May 7 & May 28

(week 7 & week 10)

Demonstrate knowledge of the course content through written application. Midterm content will include course learning up through week five. Final exam will be comprehensive.

## Evaluation/Assessment Rationale for Grade Determination

Course grades will be compiled by the completion of the following assignments:

Journal Responses.....	50
Math Portfolio.....	250
Fieldwork & Presentation.....	125
Research Article Review.....	50
Lecture Notes.....	25
Midterm & Final.....	100
Total: 600 points	

### Grading Scale:

564-600 pts. ....	A
546-563 pts. ....	A-
528-545 pts. ....	B+
504-527 pts. ....	B
480-503 pts. ....	B-
468-479 pts. ....	C+
444-467 pts. ....	C
420- 443 pts. ....	C-
360-419 pts. ....	D

#### A

Superior knowledge regarding details, assumptions, implications, history; superior thinking with information relevant to application, critique and relationship to other information.

#### B

More than adequate knowledge regarding technical terms, distinctions, and possesses an ability to use information.

#### C

Basic knowledge needed to function and carry on learning regarding major principles, central terms, major figures, also possesses an awareness of field or discipline.

## Attendance & Participation

Attendance is mandatory. No points will be earned for attendance. There will be one absence allowed with no penalty, however, the second absence will constitute 20 points being deducted from the total points earned in the class. Any student who is more than 30 minutes late will be counted as absent for that class meeting. Students who are absent two (2) times must make an individual appointment with the professor before the next

class meeting to discuss future attendance requirements and the possibility of receiving a “non-passing grade” in the class. Students are responsible for all class materials and information. Much of the information presented in class will not be found in the text materials. Students will be expected to be punctual, stay the entire class session, and have required materials and assignments prepared for each class.

## Grading

Grading will be assigned on a point basis. The point distribution takes into consideration diverse learning styles. The grading criteria consists of multiple forms of assessment to include: active/creative demonstration of course content through cooperative group work and verbal presentations, research skills in course content, communication of course content through written application, formal assessments structured as mid-term and final, and application of course content through in-class assignments, activities, and journal reflections. Papers, assignments and exams will be graded on your ability to demonstrate your understanding of the material presented in the readings, discussions, and outside assignments. Quality work includes mastery of key concepts demonstrated through application in various contexts. A good command of standard written English is expected in all written work. If an assignment has many grammatical format or mechanical errors, the student may be asked to visit the Learning Enhancement Center. Appointments with tutors must be made 24 hours in advance. Call (909) 593-3511 x4342 for information.

## Course Policies

Make up work and extra credit work is not accepted. All assignments for the course are to be completed and submitted on time in order to receive full credit. Late assignments will be penalized 10% of the total points available per assignment for each week late, or portion thereof. Permission for late work is granted only by special request. Incompletes are rare and are available only in “special or unusual circumstances” as negotiated with the instructor prior to the end of the term. See Student Handbook for policies regarding Withdrawals and grade record permanence.

It is the student’s responsibility to officially withdraw from the class if no longer attending. Failure to do so will result in the grade of “F”. Students are responsible for all information covered in every session. It is recommended that students exchange phone numbers with others so that in case of absence, information covered in class may be obtained. Students enrolled in this course are required to have computer and internet access. All work must be completed on a word processor. Students are expected to access the course website on a weekly basis. Cell phones must be in silent mode during class times. Out of consideration to your classmates and instructor, all calls must be taken out of class. It is expected that students will make responsible judgments to the importance of a call during class time.